

US-PAT-NO: 6131010

DOCUMENT-IDENTIFIER: US 6131010 A

See image for Certificate of Correction

TITLE: Rotatable member having elastic layer and fixing apparatus having said rotatable member

DATE-ISSUED: October 10, 2000

INVENTOR-INFORMATION:

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US-CL-CURRENT: 399/333, 399/330

ABSTRACT:

A fixing apparatus for use in an image forming apparatus such as a copying apparatus or a laser beam printer is disclosed. The fixing apparatus has a heater, a rotatable member having the heater therein, and a pressing member forming a nip by coming into contact with the rotatable member. The rotatable member is provided with a core and an elastic layer formed on the core, and the elastic layer has a JIS-A Standard rubber hardness not more than 5.degree..

37 Claims, 21 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 21

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Brief Summary Text - BSTX (12):

With a conventional roller, if the fixing roller and the pressing roller are left in pressure contact with the heater turned off, i.e., not heated by the heater for a long period of time (for a night, for example), the roller collapsed at the pressure-contact portion as shown in FIG. 21 would harden, and this deflection would not be eliminated even by heating again with the heater. This causes abnormal sound during rotation of the rollers. A larger deflection leads to a problem of occurrence of a defective image caused by irregular rotation.

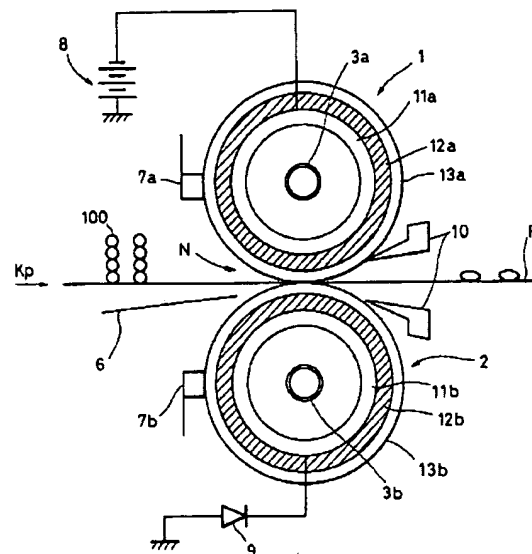
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Oct. 10, 2000

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6,131,010

FIG. 1



US-PAT-NO: 6463250

DOCUMENT-IDENTIFIER: US 6463250 B1

TITLE: Externally heated deformable fuser roller

DATE-ISSUED: October 8, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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US-CL-CURRENT: 399/330, 399/333

ABSTRACT:

A deformable toner fuser roller, for use in a fusing station of an electrostatographic machine comprising a rigid cylindrical core member; an overdrive-controlling, elastically deformable structure surrounding the core member; and wherein the fuser roller is adapted to be heated by a heat source external to the roller and the overdrive-controlling elastically deformable structure comprises an effective or operational Poisson's ratio between 0.2 and 0.4.

18 Claims, 8 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

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Brief Summary Text - BSTX (27):

Electrophotography can be used to create high quality multicolor toner images when the toner particles are small, that is, diameters less than about 10 micrometers, and the receivers, typically papers, are smooth. A typical method of making a multicolor toner image involves trichromatic color synthesis by subtractive color formation. In such synthesis, successive imagewise electrostatic images, each representing a different color, are formed on a photoconductive element, and each image is developed with a toner of a different color. Typically, the colors correspond to each of the three subtractive primary colors (cyan, magenta and yellow) and, optionally, black. The imagewise electrostatic images for each of the colors can be made successively on the photoconductive element by using filters to produce color separations corresponding to the colors in the image. Following development of the color separations, each developed separation image can be transferred from

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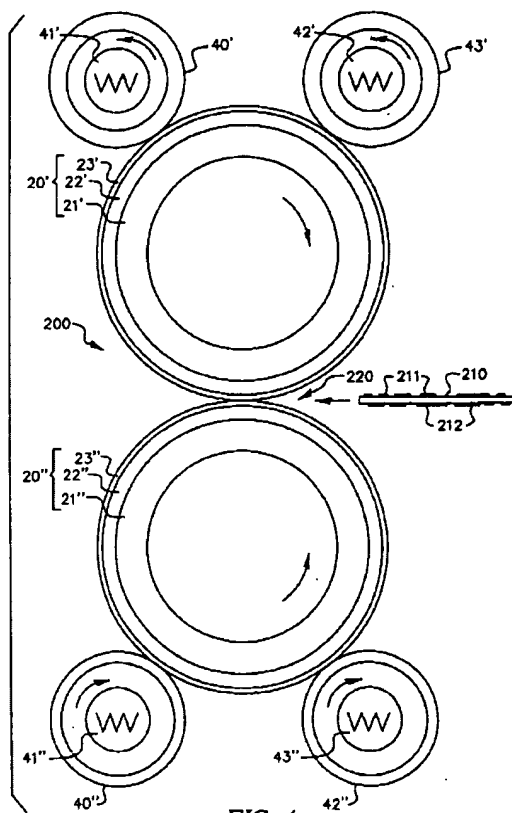


FIG. 4

US-PAT-NO: 6567641

DOCUMENT-IDENTIFIER: US 6567641 B1

TITLE: Sleeved rollers for use in a fusing station employing an externally heated fuser roller

DATE-ISSUED: May 20, 2003

INVENTOR-INFORMATION:

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Priebe; Alan R.	Rochester	NY	N/A	N/A
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US-CL-CURRENT: 399/330, 219/216, 399/328, 399/331, 399/333

ABSTRACT:

A conformable roller for use in a fusing station of an electrostatographic machine, the fusing station being provided with a pressure roller and a fuser roller for fusing a toner image on a receiver, the fuser roller made from a plurality of layers surrounding an axis of rotation, the conformable roller comprising a rigid cylindrically symmetric core member; a flexible replaceable removable compliant sleeve member in the form of a tubular belt surrounding and nonadhesively intimately contacting the core member; and the fusing station including an external heat source for the fuser roller, at least one of the plurality of layers being thermally resistive.

29 Claims, 20 Drawing figures

Exemplary Claim Number: 8

Number of Drawing Sheets: 15

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Brief Summary Text - BSTX (16):

A potentially serious problem for fusing arising from the presence of overdrive is "differential overdrive", associated for example with tolerance errors in mounting the rollers forming the fusing nip, or with roller runout. Runout can have many causes, e.g., fluctuations in layer thicknesses along the length of a roller, variations in the dimensions of a core member, an acentric roller axis, and so forth. It will be evident that differential overdrive can result in localized differential slippages along the length of a fusing nip, inasmuch as the local effective speed ratio would otherwise tend to fluctuate or change with time along the length of the nip causing some portions of the

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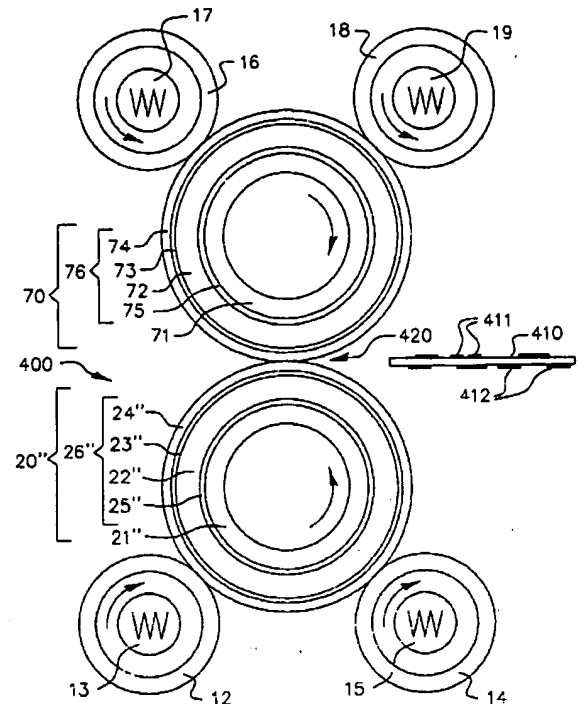


FIG. 5

US-PAT-NO: 6553204

DOCUMENT-IDENTIFIER: US 6553204 B1

TITLE: Fixing device for fixing a toner image in an image forming apparatus

DATE-ISSUED: April 22, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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US-CL-CURRENT: 399/328, 219/216, 399/122, 399/329

ABSTRACT:

An image forming apparatus and a fixing device for fixing a toner image on a transfer member include a fixing roller and a backup roller configured to press the image transfer member against the fixing roller, wherein either one of a circumferential hardness of the fixing roller and a circumferential hardness of the backup roller is configured to be harder than that of the other roller. The image forming apparatus and the fixing device further include a first gear coaxially mounted on the roller having the harder circumferential surface, a one-way clutch coaxially mounted on the other roller, and a second gear coaxially mounted on the one-way clutch. The first gear and the second gear are configured to be engaged when the backup roller presses the image transfer member against the fixing roller, and one of the first gear and the second gear is driven by a drive motor. Further, the backup roller and first gear are configured to be open relative to the fixing roller, the fixing roller being fixed in position for a maintenance operation. Also, a heating device may be provided to directly contact an outer surface of the fixing roller.

7 Claims, 9 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 9

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Brief Summary Text - BSTX (6):

FIG. 1 is a schematic view illustrating a heat roller fixing device as an example of background art. The heat roller fixing device of FIG. 1 is typically used for fixing a relatively thick toner image, such as a fixed toner image required to be glossy such as a full color toner image. Referring to FIG. 1, the heat roller fixing device provides a fixing roller module 5, a backup roller module 6, a cleaning roller 13, and an oil coating roller 14. The fixing roller module 5 includes a halogen heater 1 as a heat source, a fixing roller having a hollow metal core 2, an elastic layer 3 on the hollow metal core 3, and a release agent layer 4 as the outermost layer. Similarly,

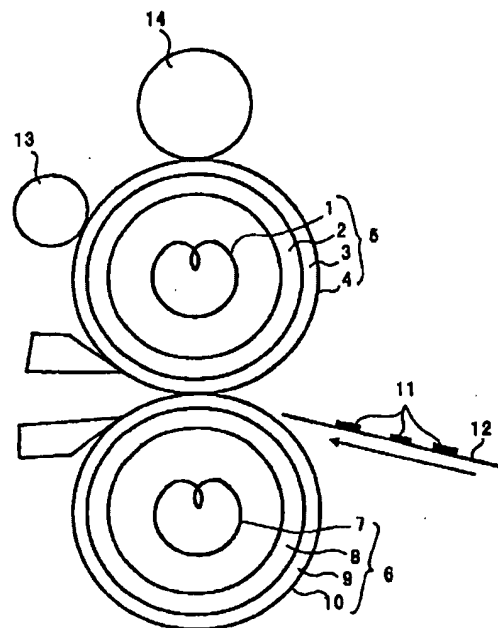
U.S. Patent

Apr. 22, 2003

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US 6,553,204 B1

FIG. 1 PRIOR ART



PGPUB-DOCUMENT-NUMBER: 20030118363

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030118363 A1

TITLE: Image forming apparatus

PUBLICATION-DATE: June 26, 2003

INVENTOR-INFORMATION:

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APPL-NO: 10/ 263962

DATE FILED: October 4, 2002

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
JP	311554/2001(PAT.)	2001JP-311554/2001(PAT.)	October 9, 2001
JP	279075/2002(PAT.)		September 25, 2002
		2002JP-279075/2002(PAT.)	

INT-CL: [07], G03G015/20

US-CL-PUBLISHED: 399/69, 399/328

US-CL-CURRENT: 399/69, 399/328

REFERENCE-FIGURES: 2

ABSTRACT:

An image heating apparatus includes a rotatable member; back-up means for cooperating with the rotatable member to form a feeding nip for feeding a recording material; heating means for heating an outer peripheral surface of the rotatable member, the heating means including a heater in the form of a plate cooperable with the rotatable member to form a heating nip.

Parent Application Publication Jun. 26, 2003 Sheet 9 of 12 US 2003/0118363 A1

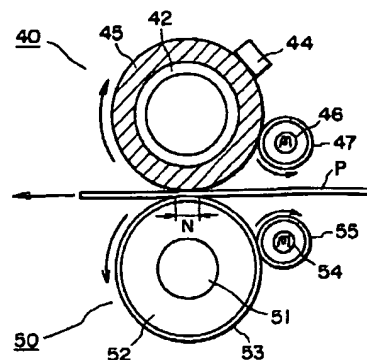


FIG. 11

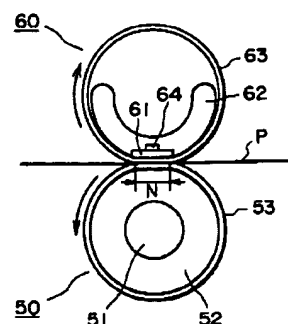


FIG. 12